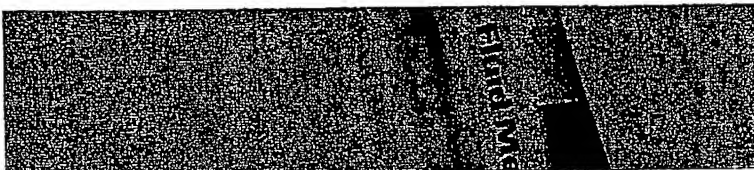


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Biodegradation of low-density polyethylene, polystyrene, polyvinyl chloride, and urea formaldehyde resin buried under soil for over 32 years

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Résumé / Abstract

The biodegradation of several polymers that had been buried under soil for over 32 years was examined. No evidence of biodegradation was found for polystyrene, polyvinylchloride, and urea formaldehyde resin. A remarkable degradation was indicated for low density polyethylene thin films which were directly in contact with soil. Severely degraded parts of the film is characterized by whitening. Many small holes were recognized on the surface of the whitened part. The whitened part is specific for the growth of hyphae. FT-IR spectra of the whitened part showed a characteristic band in the vicinity of 1640 cm⁻¹ which was assigned to the stretching vibration of C=C bond. Although the part which was not in contact with soil was clear, it also showed evidence of degradation from the presence of carbonyl band in FT-IR. It was suggested that the degradation of the clear part is due to the usual thermo-oxidative process, while the degradation of the whitened part is due to the biotic process.

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